

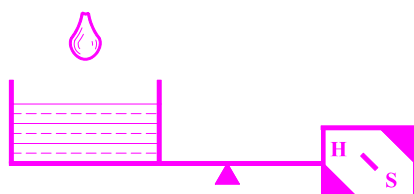
## RAINGAUGE HEATER KIT MODEL TBH-LP



- **Power Requirement AC/DC**
- **Low Power Consumption - Only Operating When Snow Is Detected**
- **Fully Automated Operation**
- **Thermostatically Controlled Heating Element**
- **SDI-12 Interface**

ISO  
9001

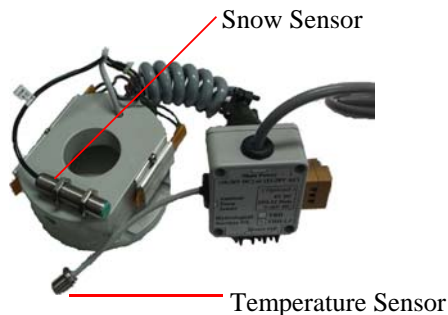
QUALITY SYSTEM  
CERTIFIED



**HYDROLOGICAL SERVICES PTY.LTD.**  
HYDROLOGICAL INSTRUMENTS & EQUIPMENT  
DESIGNED AND MANUFACTURED  
BY HYDROLOGISTS

## DESCRIPTION

The Hydrological Services Tipping Bucket Heater has been designed for use with the Hydrological Services Tipping Bucket Raingauges. The device is a thermostatically controlled heating element, that raises the temperature of the interior of the rain gauge, funnel and catch to avoid the freezing of the gauge in cold climates with subsequent loss of precipitation records. When the ambient temperature drops below a preset value (+ 4°C), the snow sensor in the funnel is activated. The heating elements remain “OFF” until snow is detected in the catch area (funnel). The heating elements are turned on and off to keep the funnel temperature at the preset Setpoint temperature. (+ 10°C ) This will continue for a minimum preset time (18 mins) after there is no snow remaining in the catch. The heater will then be switched off and the unit will return to the “WAIT” mode until triggered by another snow event. The system will be de-activated when temperature drops below (-20 °C) or above (+5 °C) nominal.



The combination of snow sensor and thermostatic control of the heater element is designed to conserve power. The TB Heater is supplied ready to be installed with no settings required. The TB Heater incorporates an SDI-12 interface that allows the operator to configure, monitor and manually control the TB Heater – depending on the system requirements. (It is not mandatory to use the SDI-12 interface – but only optional if more detailed information or control is required.) The SDI-12 interface is optically isolated from the control electronics, because the control electronics may be operated from AC and therefore have separate earthing. The SDI-12 interface requires a separate 12V DC power source. For information relating to the TB3 Tipping Bucket Rain gauge, refer to the TB3-100 Instruction Manual.

## OPERATION

When the TB Heater is “not Active” the status LED flashes every 1.5 seconds. When the ambient temperature sensor detects the temperature fall below the “Active On temperature” (+4°C) then the system becomes “Active” and the snow sensor is enabled. The status LED flashes slightly faster at 2 flashes per second – indicating the system is active. When the proximity sensor detects snow (for 5 seconds continuously), the heater elements are turned on and the block temperature sensor is monitored. The heaters are controlled so that the temperature inside the funnel reaches the Set Point temperature (+10°C). The lower heating block keeps the tipping bucket and the drain tubes from freezing up. While the heater elements are turned on, the status LED flashes at 8 flashes per second. (For more information about the operation of the TB Heater please refer to the manual).

## SPECIFICATIONS

### Ambient temperature range

-40°C to +70°C (-40°F to +158°F)

### Snow sensor and heater operating parameters

Between -20°C to +5°C (-4°F to 41°F)

### Average power generated

35 watts (150 watts during initial minute warm up)

### Voltage requirements

Main Power: 10VDC to 30VDC OR  
12VAC to 28VAC

SDI-12 Power: 9.6VDC to 16VDC (SDI-12 standard)

**SDI-12 Interface** optically isolated ,1200 baud, 7 bits, even parity.

### Power generated and current requirements

- 12 VDC
- 45 watts average (70 watts when heater is on)
- 3.7 amps average (approx 65% duty cycle) (5.8 amps when the heater is on)

### Average weekly energy consumption

- Assume 4 x 10 hour snow storms in a week
- Energy = 4 x 10 x 45W = 1800 Watt hours / week
- AmpHours = 4 x 10 x 3.7A = 150 AmpHours (over 1 week)
- Which averages to 150Ah / (24 x 7) = 0.9 Amps Average over a week

**Specifications are subject to change at anytime without notice.**

## HYDROLOGICAL SERVICES PTY. LTD.

48-50 SCRIVENER STREET, WARWICK FARM, 2170 SYDNEY,  
AUSTRALIA.  
A.B.N. 37 000 732 954  
PO Box 332 Liverpool BC 1871  
PH: 02 96012022 (INT.612 9601 2022)  
FAX: 02 9602 6971 (INT.612 9602 6971)  
Email: [sales@hydrologicalservices.com](mailto:sales@hydrologicalservices.com)  
Website: [www.hydrologicalservices.com](http://www.hydrologicalservices.com)

Distributed by